

LOUISIANA DEPARTMENT OF WILDLIFE & FISHERIES

**OFFICE OF FISHERIES
INLAND FISHERIES DIVISION**

VEGETATION CONTROL PLAN

SALINE LAKE



Prepared by:
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District 10
February 4, 2013

1. Waterbody type – Wooded tributary impoundment.
2. Age and condition of control structure (if applicable) – Saline Lake Dam is located primarily in Natchitoches Parish with a small portion of the embankment and the entire spillway located in Winn Parish. From the intersection of U S Highway 84 and U S Highway 71 in Clarence, proceed 6.1 miles easterly on U S 84 and turn left onto Chee Chee Dam Road; then proceed 2.2 miles northerly to the south end of the south embankment.

Saline Lake Dam was designed by the Louisiana Department of Public Works, constructed by H & H Construction Company and completed in 1992. The Chee Chee Dam was demolished after completion of the Saline Lake Dam. A photograph of the Saline Lake Dam appears in Figure 1.



Figure 1. Saline Lake Dam, Winn Parish, Louisiana.

According to the Louisiana Department of Transportation and Development's Dam Inspection and Evaluation Report dated March 16, 2011; the Saline Lake Dam is fulfilling its intended purpose. The report stated that all gates were closed and operational at the time of the inspection. The report noted the following maintenance points as needing attention:

1. There is an old/stabilized slide on the upstream slope of the embankment about 1000 feet north of the spillway that should be monitored for movement.
2. Trees are growing on the embankment slopes where fences cross the embankment and

other places that should be cut or removed.

3. There are numerous animal burrows in the embankment slopes that are to be excavated, filled, compacted, seeded, fertilized and mulched.

4. Driftwood and debris are hitting the steel support columns for the fish gate stems. The connections between the steel column and spillway weir are to be inspected during low pool water and corrective action taken if necessary.

5. There is brush and high grass growing in the rip rap along the north training wall that should be cut and sprayed.

6. There are brush/debris piles on the downstream slope of the embankment that are to be removed.

7. Grass on the embankment is to be cut prior to the inspection so that surface defects can be observed. Regularly mowing the grass may reduce the lotus tree/vine thorn problem also.

8. Warning signs are to be installed on the upstream side of the warning buoy posts on the upstream side of the spillway.

9. There are multiple areas on the upstream slope near the heel of the embankment where feral hogs are rooting. These areas are to be repaired, and an effort made to keep the hogs from the embankment.

3. Type of control structure – Saline Lake Dam consists of approximately 500 feet of earthen embankment on the south side of the spillway, and a 400-foot wide concrete spillway located in Winn Parish. There is also approximately 15,400 feet of earthen embankment to the north and west of the spillway, of which about 400 feet is in Winn Parish and 15,000 feet is in Natchitoches Parish. There is a 6' by 3' fish gate located near each end of the spillway wall. The fish gates are operated by lowering the gate from the water surface. The fish gates were designed to allow fish passage, primarily shad species, to enter the lake at times of high downstream water levels. The outlet consists of three 6'x 6' sluice gates in the spillway wall. These sluice gates are operated by raising the gates from the bottom of the structure.
4. Water level range (MSL) – Pool stage = 103.0 MSL; High = 110.47 MSL; Low = 95 MSL (equal to pool stage of Red River).
5. Surface area – At pool stage = 8,400 acres.
6. Average depth – At pool stage, avg. depth = 7 feet; maximum depth = 16 ft.
7. Watershed ratio – 32:1; 420 sq. miles or 268,799 acres of watershed to 8,400 surface acres.
8. Drawdown potential of structure – 8 feet maximum potential at a rate of 4 inches/day.
9. Lake Authority – Saline Lake Game and Fish Preserve Commission.
Creation / Nomination – The creation of the Saline Lake Game and Fish Preserve Commission (SLGFPC) is closely tied to the creation of the Northwest Louisiana Game and Fish Preserve Commission (NLGFPC). Originally, Black Lake, Clear Lake and Saline Lake were all under the authority of NLGFPC for which LDWF served as the

oversight agency. Subsequently, SLGFPC was created and became the authority over Saline Lake. LDWF also serves as the oversight agency for SLGFPC. A history of these two lake commissions is detailed as follows.

History of the Saline Lake Game and Fish Preserve Commission

The Northwest Louisiana Game and Fish Preserve (Preserve) was established by the Louisiana Legislature and was initially placed under the control of the Louisiana Conservation Commission through Act 191 of 1926. The Preserve was initially comprised of three artificially created lakes (Black Lake, Clear Lake, and Saline Lake) and the surrounding lands. It was developed for recreation and for the preservation of wildlife and fisheries. After creation of the Preserve, the State constructed a dam, known as the Allen Dam, to keep water in the lakes from draining. In 1928, the Preserve was placed under the control of the Louisiana Department of Conservation through Act 69 of 1928. In 1946, the Louisiana Legislature created the Northwest Louisiana Game and Fish Preserve Commission (NLG&FC) and granted it authority to administer the Preserve and adopt rules and regulations thereof through Act 120 of 1946. While the NLG&FC was originally placed under the supervision of the Department of Wildlife and Fisheries, the NLG&FC was vested with the *“right, power and authority to sue and be sued as a subdivision of the State”* and to *“purchase, lease or expropriate all property necessary to the erection and maintenance of the Preserve”*. The State of Louisiana retained title to the lakes, as well as the surrounding land and lake bottom. Act 105 of 1976 placed the NLG&FC under control of the Louisiana Wildlife and Fisheries Commission. Additionally, the Act removed Saline Lake from the authority of the NLG&FC and placed it under the authority of the Saline Lake Game & Fish Preserve Commission.

SLGFPC is comprised of five members serving individual four year terms. Membership consists of three residents of Winn Parish and two residents of Natchitoches Parish. Members are appointed by the respective police juries from each parish.

Primary contact information – Saline Lake Game & Fish Commission, P O Box 847, Winnfield, LA 71483.

Table 1. Saline Lake Fish and Game Preserve Commission members as of March, 2012.

President – Bill Hightower

Secretary - Richard Bagwell

Larry Thompson

Billy Barton

Barry Bolton

Procedure for spillway openings – For lake management objectives, LDWF will initiate recommendations, or consider recommendations from SLGFPC for a drawdown. The LDWF Secretary submits a request to the Secretary of DOTD that includes, requested date of opening, water level desired, desired dewater rate, date of gate closure, and purpose for gate operation.

For flood control purposes, operation of the structure gates is directly requested of DOTD by SLGFPC as per statute below.

RS 38:24

§24. Rules and regulations; inspection of dams

A. ***

B. Notwithstanding any other provisions of law or any rules and regulations to the contrary, the legally constituted boards of commissioners of Black Lake, Clear Lake, and Saline Lake in Natchitoches Parish may recommend directly to the Department of Transportation and Development that the dams situated on said lakes should be opened for flood-control purposes only. The chief engineer, or his authorized representative, shall have the final authority for determining the necessity of opening the dams, and no other department of state government shall be involved in these flood-control activities. Acts 1991, No. 532, §1; Acts 1995, No. 1049, §1.

Table 2. Drawdown history for Saline Lake, LA.

DATE	PURPOSE	LOWEST LEVEL (MSL)	GATES OPENED	BACK TO POOL STAGE	NOTES
1973	Weed Control	100.0	Fall	Spring	Successful
1974	Weed Control	97.0	Fall	Spring	Successful
1975	Weed Control	100.0	10-01-75	02-29-76	Drawdown recommended by LDWF/ No record of occurrence
1978	Weed Control	100.0	Fall	Spring	Successful
1979	Weed Control	94.0	Unknown	Unknown	Successful
1982	Weed Control	96.0	06-15-97	12-30-97	Successful
1987	Shoreline Clearing	96.5	Spring	Fall	See Attach. "D" Successful
1992	Dam Construction	Unknown	Winter	Winter	Successful
1997	Weed Control	95.0	06-16-97	11-1-97	Successful
2001	Weed Control	99.0	07-01-01	10-15-01	Cancelled by SLGFPC
2004	Weed Control	97.0	06-14-04	10-24-04	Successful
2008	Fish Gate Operation	99.5	04-14-08	04-29-08	Unsatisfactory results
2008	Fish Gate Operation	98.0	Unknown	07-19-08	Unauthorized operation of gates
2012	Weed Control	96.0	09-06-12	01-14-13	Successful

Anglers and recreational boaters constitute the majority of lake users. Shoreline residents are present. No potable water intakes are present at Saline Lake. However, several shoreline property owners utilize lake water for small scale irrigation systems servicing lawns and gardens.

Anglers and boaters have interest in sufficient water levels to allow pursuit of their activities. Concerns of the irrigation user group include sufficient water level as it affects water intakes and presence of herbicides within waters used for irrigation. All user groups have interest and concerns regarding vegetation control so far as such control allows them access to and use of the waters of Saline Lake.

Vegetation complaints at Saline Lake are chronic in nature and have been so for the last 40 years. In years past, most complaints were related to water hyacinth, lotus and a variety of submerged aquatic vegetation including fanwort (*Cabomba caroliniana*), coontail (*Ceratophyllum demersum*) and bladderwort (*Utricularia sp.*) More recently, giant salvinia (*Salvinia molesta*) has generated the majority of vegetation complaints at Saline Lake.

The majority of controversies related to Saline Lake have been associated with scheduled drawdowns. In each instance, shoreline property owners, anglers or waterfowl hunters have been the primary complainants. In most cases, waterfowl hunters have opposed drawdowns based on the fact that lower lake levels prohibit access to and success of duck blinds on the lake. In some cases, the SLFGPC has voted to abandon planned drawdowns for various reasons. No record is found of any successful legal action preventing a drawdown.

Aquatic Vegetation Status:

As of January 1, 2013 the total infestation of the major problem plant species at Saline Lake is estimated to be as listed below:

- Giant salvinia (*Salvinia molesta*) – 1,000 acres
- Water hyacinth (*Eichhornia crassipes*) – 150 acres
- American lotus (*Nelumbo lutea*) – 100 acres
- Fragrant Water Lily (*Nymphaea odorata*) – 100 acres
- Fanwort (*Cabomba caroliniana*) – 1,000 acres
- Coontail (*Ceratophyllum demersum*) – 300 acres
- Bladderwort (*Utricularia sp.*) – 200 acres
- Duckweed (*Lemna sp.*) – 75 acres

Total vegetative coverage = 2,925 acres or 35%.

Currently, all aquatic vegetation found at Saline Lake is considered to be in the nuisance category. No efforts are being considered to introduce or reestablish any aquatic vegetation.

Limitations:

- Watershed ratio of 32:1 limits use of whole-waterbody herbicide treatments to summer season.
- Dense coverage of cypress and tupelo trees (>75%) restricts boat-based foliar applications.
- Shallow water requires use of surface drive boats to gain access to problem areas.

No regulatory factors exist which would limit LDWF's vegetation control efforts at Saline Lake. The SLGFPC is cooperative with LDWF in its efforts on this waterbody.

Both Natchitoches and Winn Parishes are located within the Louisiana Department of Agriculture and Forestry's 2,4-D waiver area. A waiver is needed to apply 2,4-D between March 15th and September 15th of each year.

Shoreline development is present in the form of residences and camps on approximately 30% of the lake shoreline.

Past Control Measures

Annual herbicide applications have been made at Saline Lake for many years. Details regarding acres treated and vegetation types targeted over the past eight years in Table 3.

Table 3. Saline Lake herbicide applications 2005 – 2012

Year	Acres Treated	Vegetation
2005	1127.50	Water Hyacinth, Common Salvinia, Water Lily
2006	1809.58	Water Hyacinth, Common Salvinia, American Lotus
2007	1737.20	Water Hyacinth, Common Salvinia, American Lotus, Giant Salvinia
2008	2308.17	Common Salvinia, Water Hyacinth, Giant Salvinia, Water Lily, Am. Lotus
2009	6136.87	Giant Salvinia, Water Hyacinth, Common Salvinia
2010	2996.61	Giant Salvinia, American Lotus, Water Hyacinth, Alligator Weed
2011	4,254.54	Giant Salvinia, Water Hyacinth, American Lotus
2012	5,612	Giant Salvinia, American Lotus, Water Hyacinth, Water Lily, Sedge, Pennywort

Historically, water hyacinth, water lily, and American lotus have been treated with foliar applications of 2,4-D at a rate of 0.5 gallons per acre. Giant and common salvinia have been treated with foliar applications of diquat at a rate of 0.75 gallons per acre. Alligator weed has been treated with foliar applications of glyphosate at a rate of 0.75 gallons per acre. In 2009, Galleon was used to treat giant salvinia at a rate of 0.068 gallons per acre.

Giant salvinia weevils (*Cyrtobagous salviniae*) have been introduced to provide a biological control agent for giant salvinia. Dates of weevil releases appear in Table 4.

Table 4. Salvinia weevil releases at Saline Lake, LA.

Year	Weevil Species	Amount Released
2007	Common salvinia weevils (<i>Cyrtobagous sp.</i>) from FI	Unknown
2008	Giant salvinia weevils (<i>Cyrtobagous salviniae</i>)	89 ft ³ of host plant
2011	Giant salvinia weevils (<i>Cyrtobagous salviniae</i>)	29,141 individuals
2012	Giant salvinia weevils (<i>Cyrtobagous salviniae</i>)	71,400 individuals

Triploid grass carp (*Ctenopharyngodon idella*), have been stocked into Saline Lake to provide a biological control agent for submerged aquatic vegetation. Dates of stocking and numbers stocked appear in Table 5. The status of triploid grass carp in Saline Lake is unclear at this time. No apparent impact by the carp on vegetation has been noted.

Table 5. Triploid grass carp stockings at Saline Lake, LA.

Year	Size	Number Stocked
2005	Phase II	7,547
2007	1 year old	29

Recent aquatic plant control efforts at Saline Lake have consisted of foliar herbicide applications of diquat at a rate of 0.75 gallons per acre for giant salvinia (*Salvinia molesta*) and 2, 4-D at a rate of 0.5 gallons per acre for water hyacinth (*Eichhornia crassipes*). This waterbody is a high priority within LDWF Inland Fisheries District 10.

Due to factors limiting access by outboard powered spray vessels, LDWF has acquired three surface drive spray vessels to increase access to problem areas within District 10. It is expected that these vessels will increase access for spray crews and allow more treatment acreage in the future.

Recommendations:

A comprehensive vegetation control plan is recommended for Saline Lake to include chemical, biological and physical control measures.

Continued foliar herbicide applications are recommended for Saline Lake. These applications will be principally directed toward control of giant salvinia (*Salvinia molesta*) and water hyacinth (*Eichhornia crassipes*), but will also include control of other floating or emergent vegetation as needed. Water hyacinth will be treated by foliar application of 2, 4-D herbicide at a rate of 0.5 gallons per acre. Giant salvinia will be treated by foliar applications of a mix of glyphosate (0.75 gal/acre) and diquat (0.25 gal/acre) with Aqua King Plus (0.25 gal/acre) and Thoroughbred surfactants (8 oz/acre) from April 1 to October 31. Outside of that time period, diquat at a rate of 0.75 gallons per acre will be used with 0.25 gallons per acre of a non ionic surfactant.

Contract spray crews will be utilized in calendar year 2013. These applications will allow more acreage to be treated in a shorter time period than can be made by LDWF crews alone. Herbicide applications will be initiated early in the growing season to prevent this waterbody from being overwhelmed by giant salvinia in the late summer and early fall seasons.

Releases of giant salvinia weevils (*Cyrtobagous salviniae*) will continue. Weevil releases will focus on areas with limited access by spray vessels.

Triploid grass carp (*Ctenopharyngodon idella*) will be monitored for presence and efficacy in controlling submerged aquatic vegetation. Future stockings of triploid grass carp will be considered if determined to be effective.

Drawdowns for vegetation control are recommended when coverage of submerged and floating aquatic vegetation exceeds 60% of total lake acreage. Drawdown period should be September 1 to January 1 of the following year. Drawdown rate should be 3 – 4 inches per day. Drawdown level should be 95.0 MSL for a reduction of 8 feet below pool level. A two year successive drawdown schedule is recommended. The action will achieve reduction in both vegetative coverage and organic sediment. It is likely that three years may be required to reduce problematic vegetation and sediment in this waterbody. Typemapping of aquatic vegetation will be used to determine vegetative coverage prior to scheduled drawdowns. Post-drawdown typemapping will be used to assess drawdown efficacy.

Saline Lake was drawn down from September 6, 2012 to January 14, 2013. It is recommended that another drawdown be conducted on this waterbody in year 2013. While initial recommendations were to follow the 2012-2013 drawdown pattern during 2013-2014, discussions are currently underway to determine the optimum timing of this upcoming drawdown.

As far back as 1971, LDWF biologists have recommended reducing the density of the cypress, tupelo forest in Saline Lake. Discussion of this topic between LDWF and SLGFPC should resume to determine feasibility.

Typemap

Vegetation surveys were conducted in years 1980 – 1984 and in 1988. Typemapping has been conducted at Saline Lake in years 2006, 2007, 2008 and 2012. The map resulting from the 2012 investigation appears in attachment A.

Attachment A Saline Lake Typemapping Report April 18, 2012

